

HYCON MFG. COMPANY
700 ROYAL OAKS DRIVE
MONROVIA, CALIFORNIA

TREVOR GARDNER
CHAIRMAN AND PRESIDENT

March 22, 1963

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Dear Mr. McCone:

During our recent conversations we discussed a series of malfunctions on prime target U-2 photographic missions which occurred during the period 20 December 1962 through 22 January 1963. I have subsequently conducted a complete review of this situation with the Hycon Special Projects Division which is our entity involved in both the field and in-plant support functions.

The malfunctions were quickly isolated and changes made to ensure that there would be no reoccurrence. The existing system has been proofed, subsequent to our meeting, by operation in 11 test missions and two headquarters directed missions without camera failure.

During the period involved in our recent discussion there had been a total of seven malfunctions which occurred between 20 December 1962 and 22 January 1963. Of these seven, four were catastrophic random failures involving different components; i.e., a film spool, a switch, a motor and a ground wire. No failures of these types had ever occurred before. Corrective action has been taken which will minimize the chances of their happening again. As a result of the failures, the manager of our Special Projects Division made a field investigation between 2 January and 12 January. The cause of all malfunctions was determined, and corrective action taken by 21 January.

The first indication that the vacuum solenoid was a potential source of trouble was on 31 December when a slow release of the solenoid was experienced. Consequently when failure of a solenoid in connection with a loss of pressure in the Q bay occurred on the 20 and 22 of January, 12 new solenoids were already in the supply system. They were immediately installed in the cameras. Problems resulting from this series of malfunctions were reviewed at a joint meeting held at your headquarters on 31 January 1963. At this meeting there was a complete meeting of the minds on steps to be taken to ensure continued high level of effectivity of the equipment.

Honorable John A. McCone
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For your background information, the effectivity of the operation from 1959 to date has averaged better than 96%. To place this figure in proper perspective I should emphasize that the B cameras were run for a total of 632,890 cycles during the calendar year 1962. Such high effectivity in the face of heavy use reflects the close cooperation and coordination between our organizations as well as the complete dedication of highly competent Hycon and Agency personnel working on the program. In most cases, in-plant repairs of B cameras have been scheduled on a "crash" basis due to the critical shortage of B cameras in the inventory.

It is clearly understood by all concerned that the B cameras, which have been used heavily for over six years, require a continued high level of maintenance. We have recently increased the size of our maintenance organization to meet this need. Approval of procurement action for six additional B cameras which has been pending in your organization for the past month could provide additional capability which will permit a scheduled maintenance program and also provide increased capacity.

Sincerely yours,

Enclosure - Summary of B Camera Malfunctions

Honorable John A. McCone
Director
Central Intelligence Agency
Washington 25, D.C.

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cc: 

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| | <u>Mission % Effectivity Configuration</u> | <u>Date</u> | <u>Malfunction</u> | <u>Corrective Action</u> |
|----|--|-------------|---|--|
| 1. | GRC-133 (10%) B#10 | 12-20-62 | Bearing housing on aft take-up spool worked toward the outside pushing against nut on cassette shaft. This caused extreme binding between take-up and supply spools. Take-up and drive clutches slipped and film drive stopped. | Headquarters agreed to stop use of all 4" core spools on operational missions. Only 6" core spools with higher reliability will be used. |
| 2. | GRC-134 (48%) B#10 | 12-23-62 | Tension sensor switch points burned shut. C/B 503 opened and film drive stopped. | Separate circuit breaker installed to prevent complete system failure. Tension actuators redesigned to reduce operating frequency. |
| 3. | GRC-136 (78%) B#10 | 12-27-62 | Shutter malfunction - wind motor of Shutter #67 lost power and would not start. | This is a random type failure which is very difficult to forecast. A new procedure for checking current-load ratios is now being evaluated and if promising, will be used as a check in the field. |
| 4. | G-3208 (0%) B#9 | 12-31-62 | Malfunctioned on fifth 30 sec. cycle period prior to run. Wrap on 9L metering roller. Vacuum was remaining on after start of re-cycle. Vacuum valve sticking during post flight inspection. | Timing was changed to allow more time for release of valve after exposure. The adjustment of the valve seat was tightened to assist the release spring. |
| 5. | G-3210 (92%) B#9 | 1-3-63 | Break in ground wire on shutter cable caused malfunction. Shutter would not trip in 3L position. | Shutter cables ordered replaced every 25,000 cycles. No cables had ever before been replaced as a maintenance function. |

| | <u>Mission % Effectivity Configuration</u> | <u>Date</u> | <u>Malfunction</u> | <u>Corrective Action</u> |
|----|--|-------------|--|--|
| 6. | GRC-138 (?) B#3 | 1-20-63 | Vacuum valve assembly was not fully actuating due to magnetic lock. This coupled with low Q-Bay pressure caused loss of vacuum. | New nickel sleeve solenoids were available on 21 January and were couriered to the field on 22 January. The type failure we had was so unique that the manufacturer (IMC Magnetics) had only heard of it one other time. |
| 7. | G-3215 (?) B#9 | 1-22-63 | Possible vacuum loss - Q-Bay pressure lost and hatch heater failed during mission. | |